UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/655,093	09/05/2000	Hemang Chamakuzhi Subramanian	JP920000177US1	8256

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EXAMINER
OSMAN, RAMY M

ART UNIT	PAPER NUMBER
2157	6

DATE MAILED: 10/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

PR4

| Office Action Summary | Application No. 09/655,093 | Applicant(s) SUBRAMANIAN, HEMANG CHAMAKUZHI |
| | Examiner Ramy M Osman | Art Unit 2157 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____ .

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1-19_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) _1-19_ is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

       1.☐ Certified copies of the priority documents have been received.

       2.☐ Certified copies of the priority documents have been received in Application No. _____ .

       3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Specification

1.   The disclosure is objected to because of the following informalities:

On page 2 line 8, "Multi Cost" should be changed to "Multi-Cast".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

2.   Claims 1 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aguilar

et al. (U.S. Patent No. 6,490,677) in view of Gigliotti et al. (U.S. Patent No. 6,393,458) in further

in view of Lassiter (U.S. Patent No. 6,601,096).

3.   In reference to claims 1,8 and 14, Aguilar teaches a computing system comprising of

plurality of clients and boot servers of a particular type, and single DHCP/PXE server (column 4

lines 45-67 & column 5). Aguilar does not teach a method, system and computer program in said

DHCP/PXE server for allocating a boot server to each requesting client characterized in that the

least loaded boot server is prioritized for service by:

Maintaining a boot Server Allocation Table (SAT) containing the existing client load

count for each boot server. However Gigliotti teaches maintaining load-balancing information

containing load counts for servers (column 4 & column 6 lines 14-67). It would have been obvious to one having ordinary skill in the art to modify Aguilar by making the DHCP/PXE server perform load balancing operations by maintaining server load balancing information for allocating boot servers to requesting clients as per the teachings of Gigliotti to redistribute system traffic so as to prevent overload of any one server.

Maintaining a Client Allocation Table (CAT) associating each client IP address with the corresponding boot server IP address. However Lassiter teaches the client giving the DHCP/PXE server information about itself and the DHCP server identifying server IP address (columns 1&2 and column 3 lines 15-55). It would have been obvious to one having ordinary skill in the art to modify Aguilar by making the DHCP server perform load balancing operations by maintaining client and boot server information for allocating boot servers to requesting clients as per the teachings of Lassiter to redistribute system traffic so as to prevent overload of any one server.

Prioritizing the boot servers by sorting said SAT in order of increasing load count whenever it is updated. However Gigliotti teaches prioritizing servers by sorting load readings whenever they are updated (column 6 lines 37-67 & column 7). It would have been obvious to one having ordinary skill in the art to modify Aguilar by making the DHCP server perform load balancing operations for allocating boot servers to requesting clients as per the teachings of Gigliotti to redistribute system traffic so as to prevent overload of any one server.

Providing the IP addresses of the boot servers in the sequence of their listing in said SAT for access whenever a client requests the DHCP. However Lassiter teaches providing server IP addresses (column 1). It would have been obvious to one having ordinary skill in the art to

modify Aguilar in view of Gigliotti by making the DHCP server perform load balancing

operations by providing boot server IP addresses in the order of their load information for

allocating boot servers to requesting clients as per the teachings of Lassiter to redistribute system

traffic so as to prevent overload of any one server.

4.   In reference to claims 2,9 and 15, Aguilar teaches the method, system and computer

program as claimed in claims 1,8 and 14. Aguilar does not teach wherein said SAT is updated to

increment a particular boot server load count whenever that boot server sends an acknowledge

(ACK) to a requesting client. However Gigliotti teaches the load information is updated by

incrementing a server load reading whenever the server has a thread to be sent to a client

(columns 6&7).

It would have been obvious to one having ordinary skill in the art to modify Aguilar by

making the DHCP server perform load balancing operations by incrementing boot server load

readings for allocating boot servers to requesting clients as per the teachings of Gigliotti to

redistribute system traffic so as to prevent overload of any one server.

5.   In reference to claims 3,10 and 16, Aguilar in view of Gigliotti in further view of Lassiter

teach the method, system and computer program as claimed in claims 1,8 and 15 above. Aguilar

does not teach wherein said CAT is updated to include an entry associating the client with a

particular boot server IP address whenever a boot server sends an acknowledge ACK to the

client. However Gigliotti teaches a server having a thread to be sent to a client (columns 6&7).

Lassiter teaches DHCP server maintained client information that is associated with a particular

server IP address (columns 1&2 and column 3 lines 15-55).

It would have been obvious to one having ordinary skill in the art to modify Aguilar by making the DHCP server perform load balancing operations by updating client information whenever a boot server has a thread to be sent to a client as per the teachings of Gigliotti in view of Lassiter to redistribute system traffic so as to prevent overload of any one boot server.

6.   In reference to claims 4,11 and 17, Aguilar teaches the method, system and computer program as claimed in claims 1,8 and 16 above. Aguilar does not teach wherein said CAT is updated to remove an entry corresponding to a particular client whenever the DHCP refreshes it's IP addresses pool and discovers that said client is not available. Lassiter teaches DHCP server maintained client information that is updated and would be removed if the client were no longer available (columns 1&2 and column 3 lines 15-55).

It would have been obvious to one having ordinary skill in the art to modify Aguilar by making the DHCP server perform load balancing operations by maintaining updated client information for allocating boot servers to requesting clients as per the teachings of Gigliotti in view of Lassiter to redistribute system traffic so as to prevent overload of any one server.

7.   In reference to claims 5,12 and 19, Aguilar teaches the method, system and computer program as claimed in claims 1,8 and 18. Aguilar does not teach wherein said SAT is updated to decrement the load count on a particular boot server using the association between the client and server given in the CAT whenever the DHCP refreshes it's IP addresses pool and discovers that said client is not available. However Gigliotti teaches load information being updated by changing the server load reading – which can be decremented – whenever the server is polled (columns 6&7). Lassiter teaches DHCP server maintained client information that is updated and

would be removed if the client were no longer available (columns 1&2 and column 3 lines 15-55).

It would have been obvious to one having ordinary skill in the art to modify Aguilar by making the DHCP server perform load balancing operations by maintaining updated client information for allocating boot servers to requesting clients as per the teachings of Gigliotti in view of Lassiter to redistribute system traffic so as to prevent overload of any one server.

8.   In reference to claims 6,13 and 18, Aguilar teaches the method, system and computer program as claimed in claims 1,8 and 17 above. Aguilar does not teach wherein the boot Server Allocation Table (SAT) contains the boot server IP address and the count of the number of times the server is used for booting up on the network. However Gigliotti teaches maintaining load-balancing information containing load counts for servers (column 4 & column 6 lines 14-67). Lassiter teaches client information maintained by DHCP server that provides server IP addresses (columns 1&2).

It would have been obvious to one having ordinary skill in the art to modify Aguilar by making the DHCP server perform load balancing operations by maintaining updated boot server count readings for allocating boot servers to requesting clients as per the teachings of Gigliotti in view of Lassiter to redistribute system traffic so as to prevent overload of any one server.

9.   Claim 7 does not teach or define any new limitations above claims 1-6 and 8-19, and is therefore rejected for similar reasons. Aguilar in view of Gigliotti in further view of Lassiter teach the computing system as described in claim 7 and is explained above.

Conclusion

10.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure.

-     US Patent No. 6,263,368 B1

-     US Patent No. 6,233,616 B1

-     US Patent No. 6,598,159 B1

-     US Patent No. 6,189,102 B1
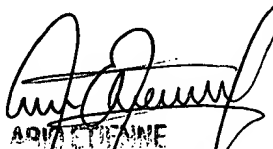
-     US Patent No. 5,872,968 A

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Ramy M Osman whose telephone number is (703) 305-8050.

The examiner can normally be reached on Monday through Friday 9AM to 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Ario Etienne can be reached on (703) 305-7562. The fax phone number for the

organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the receptionist whose telephone number is (703) 305-9600.

RMO
October 15, 2003

ARIO ETIENNE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100